

CLIPPERCREEK, INC.

INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

Len Fein

Business Operations Manager

Southwestern Region

CA, AZ, NV, NM, UT



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES



ClipperCreek, Inc.

CHARGING AHEAD . . .

Pioneered EV Charging Industry – Est.1993

- Founders: Jason France, Mike Rogers, and Dave Packard
- “Level 2” units now in 14th generation
- Products field tested for over 12 yrs.
- 4,500+ J1772 units shipped since Jan. 2009



ICS -200B



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

"Plug-ins" are Arriving with many to Come . . .



TESLA Roadster



Nissan Leaf 2010



Chevy Volt 2010



Ford Transit Connect 2011



Ford Focus 2012



Toyota Prius 2012



Toyota RAV4 EV 2012



Fisker Karma 2012

???

BMW / MB / Porsche



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

EV Charging 101...

EVSE = “Electric Vehicle Supply Equipment”

Units are NOT Chargers . . .

Primarily a SAFETY DEVICE
between Power supply and EV

Include:

- Safety electronics (GFI) & Contactor
- Vehicle Charging Cord
- SAE J1772 - compliant Connector
- SAE Communications Interlock



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

EVSE Specification Elements:

SAE – Vehicle Specifications

OEM – Charger Specs.

UL – Safety Requirements

NEC – National & Local Building Codes



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

“SAE-J1772”

Society of Automotive Engineers

- Developed “Industry Wide” standard” for Charging Connector & Protocol for all “Plug-in” EVs
- All Connectors and Vehicle “Inlets” Fully Interchangeable / compatible
- EVSE-to-vehicle communications set maximum charge current – via low voltage “Control Pilot” Signal
- Compatible with public electrical infrastructure & standard voltages



- ✓ Level 1 = House hold 120 V/13 A
- ✓ Level 2 = 208-240V \leq 80 Amps
- ☐ Level 3 = 480V DC “Fast Charging”



OEM Specifications

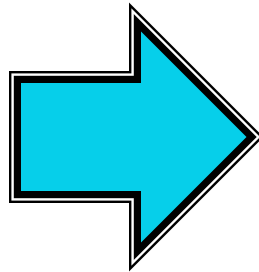
- Charge Voltage 120/208/240V AC
- Charge rate based on vehicle's battery charger
 - EVSE at 16 to 30 amps continuous
 - Now 3.3 kW and 6.6 kW (PHEV & BEV)
- Charge time = battery pack size
- Charging Inlet location varies varies by vehicle
- Vehicle Interlock – Safety interface
- Vehicle Charge status & charging management controlled through Vehicle Telematics



UL Listing

Underwriters Laboratories

- **UL 2202**
Standard for EV Charging System Equipment
- **UL 2231**
Personnel Protection Systems for EV Supply Circuits
- **UL 2594**
Electric Vehicle Supply Equipment
- **UL 2251**
Plugs, Receptacles and Couplers for EVs



NEC - Part 625

“National Electric Code”

Defines Electrical Installation
Requirements:

- Permitting
- Inspections
 - Requires listed EVSE
- Other EVSE Requirements:
 - Installation Height
 - Hardwired installation (Level 2)
 - Location
- Power Availability
 - 16 to 100 amps
 - No demand factor



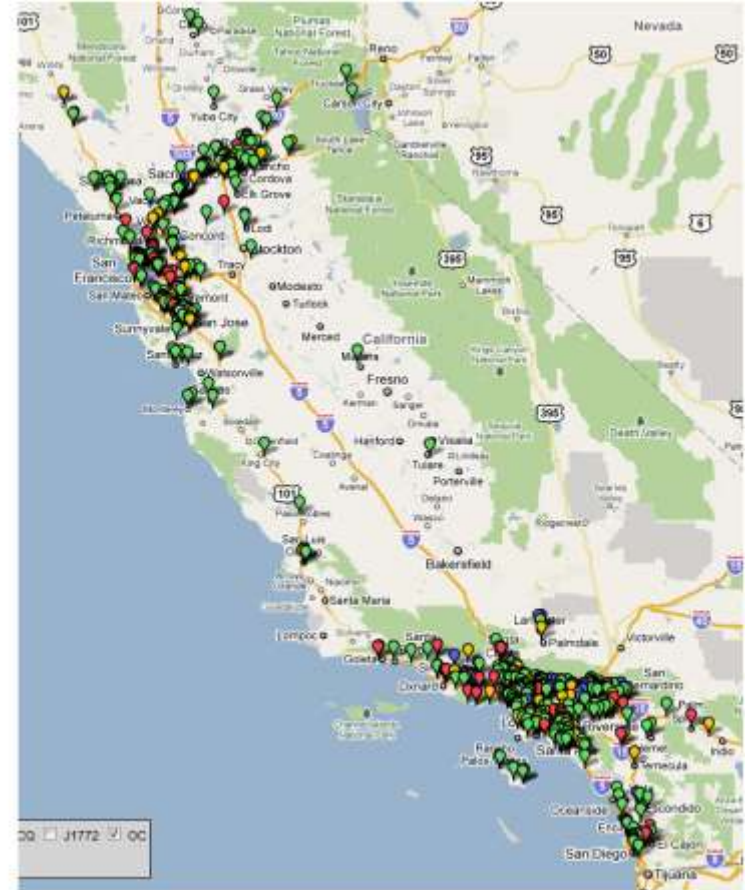
ClipperCreek CS-40
“Wall Mount” units



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

Public Charging Infrastructure

- 1200+ EVSEs now exist in CA
 - Most are Obsolete . . .
 - ClipperCreek now upgrading via CEC
 - Charging usage will remain **FREE**
- Free location mapping by Google & “Smart Phone” Apps, others to follow.
- Thousands of public EVSE projected over next few years



www.EVChargerNews.com

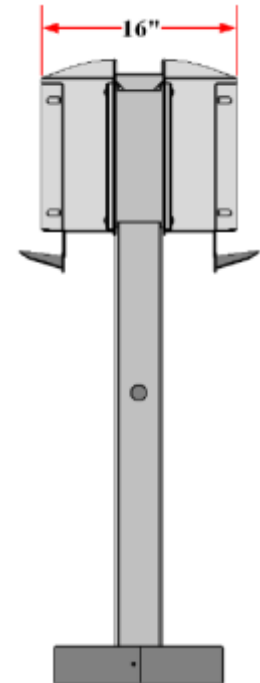
CS-Series EVSE Installation

Simple Installation

- 4 mounting points
- Conduit Runs
- L1, L2 and Ground
- Simple Test
- Integrate into TOU meter
- Existing Access Control
- Existing energy control



- Pedestal Mounting
 - 4 anchor bolts
 - Aesthetic cover
 - Sturdy installation suitable



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

ClipperCreek Technology

Software-based Digital Electrical Safety Systems

- UL 1998, UL 2202, and UL 2231
 - 20 mA CCID (“Charge Circuit Interrupting Device”)
 - Filtered signal allows for a reliable system, excellent immunity to nuisance tripping
 - Automatically performs periodic self-tests, no user testing required
 - Auto-reclosure



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

Current EVSE Products



- CS 40 > 100 series
(Level 2) infrastructure
 - Available from 30>75 amps cont.
 - Remote fault indicator
 - Auto-Reclosure and Restart
 - NEMA 4 enclosure
 - Plug and charge
- PCS-15 Portable EVSE for OEM vehicle applications
 - Auto-Reclosure and Restart
 - NEMA 4 enclosure
 - Plug and Charge
- TS-90
 - Designed & produced exclusively for Tesla Roadster



Coming ClipperCreek Products

LCS-25 . . . Low-cost Level 2 alternative or PHEVs and lower power requirement EV installations

- 20 Amps cont., 208 to 240 VAC
- Great for customers with limited capacity
- Auto-Reclosure and Restart
- NEMA 4 enclosure
- Plug and Charge
- UL listed available: March, 2011



ClipperCreek
LCS-25



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

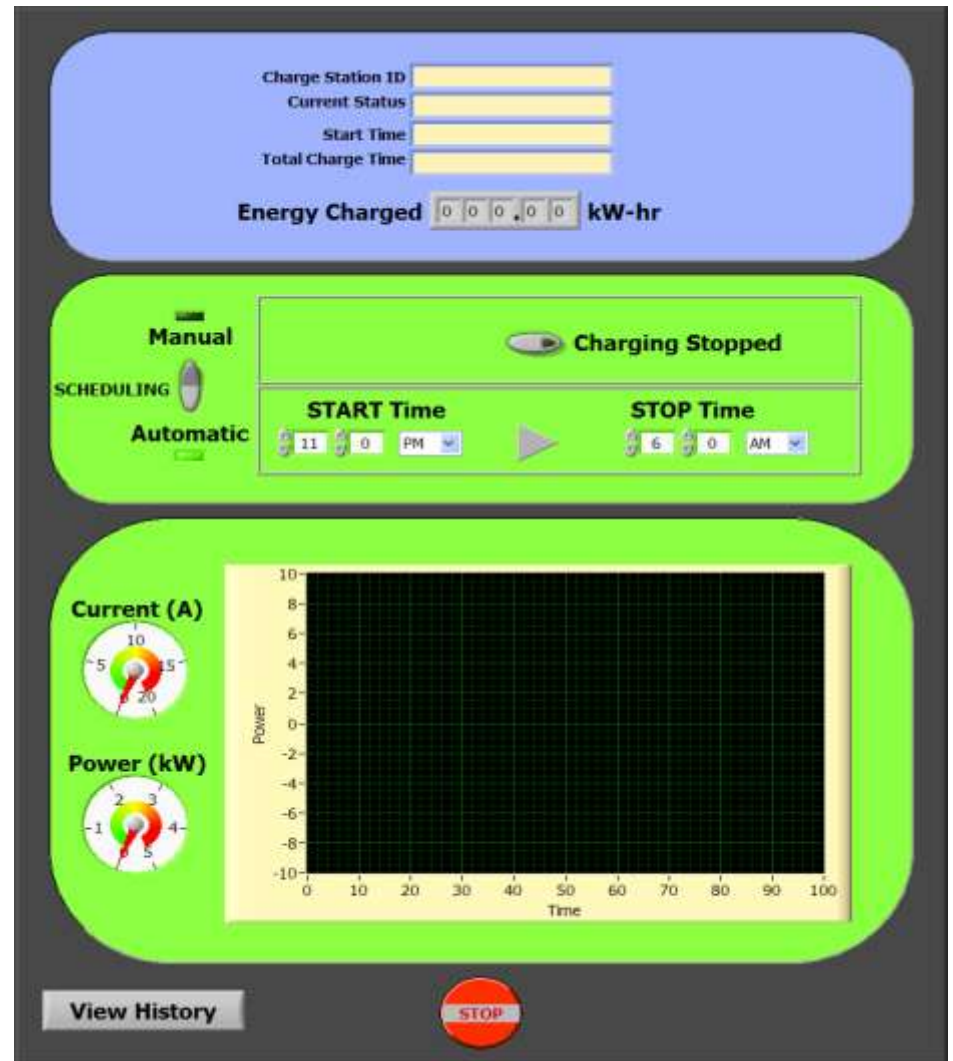
“Smart Grid-Enabled” Energy Usage Monitoring



Remote “ON” / “OFF” Switching by
Property Owner or Utility

Charge scheduling/TOU control

- Charge usage data reporting
- Data available on multiple platforms
 - Zigbee / Wi-Fi connection
 - Desktop / LAN
 - Web / Cloud
- “JIM” Available: Summer 2011
- Retrofit-able for CS-Series



ClipperCreek Advantages

- All UL Listed Products available for Immediate shipment
- Compatibility-tested with BMW, Chrysler, CODA, Fisker, Ford, Chevy, MB, Mitsubishi, Navistar, Nissan, Smart, Smith, Tesla, Toyota, Wheego, etc . . .
- National Installation & Site Engineering resources
- Proven performance in over 10 yrs. sustained commercial Fleet & private use
- Best Value – Outstanding dependability & Reliability
- Easily integrated and retrofitted with Access Control & Energy Management Systems



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES



CLIPPERCREEK, INC.

INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

Thank You . . .

Remember: **30%** Federal Tax Credit
covering EVSE purchase & installation
likely to EXPIRE after 12/31/2011

Len Fein

Len@ClipperCreek.Net
(310) 880-9133



CLIPPERCREEK, INC.
INNOVATIVE INFRASTRUCTURE FOR
ELECTRIC AND HYBRID VEHICLES

